

Application Serial No: 10/730,194
In reply to Office Action of 9 March 2005

Attorney Docket No. 84280

REMARKS / ARGUMENTS

Claims 1-5 are currently pending in the application.

Claims 1 and 2 are rejected and claims 3-5 are objected to.

Claims 1 and 2 are cancelled without prejudice or disclaimer and claim 3 is currently amended.

The Examiner has rejected claim 1 under 35 U.S.C. § 103(a) as being unpatentable over Lu et al. (U.S. Pat. No. 5804727) in view of Tang et al. (Reference A: U.S. Patent No. 5,784,333).

The Office Action states that Lu et al. teaches a method to estimate a real and imaginary dilatational wavespeed of a material (col. 3, lines 29-44), said method comprising the steps of: providing a specimen of material (col. 4, lines 11-58 and cols. 6-8, lines 34-2); providing a source of acoustic waves at a zero wavenumber (col. 4, lines 11-58 and cols. 6-8, lines 34-2); positioning said specimen at a distance from said source such that said acoustic waves conform to plane waves (col. 4, lines 11-58 and cols. 6-8, lines 34-2); exciting said specimen with said acoustic waves (col. 4, lines 11-58 and cols. 6-8, lines 34-2); measuring transfer function data subsequent said excitation of said specimen (col. 5, lines 18-54 and cols. 6-8, lines 34-2); calculating said transfer function data (col. 5, lines 18-54 and cols. 6-8, lines 34-2); and determining the real and imaginary dilatational wavespeed of said specimen from said

Application Serial No: 10/730,194
In reply to Office Action of 9 March 2005

Attorney Docket No. 84280

calculated transfer function data (cols. 5-6, lines 55-33 and cols, 6-8, lines 34-2).

Lu et al., do not mention explicitly: measuring said transfer function data in frequency domain; calculating and frequency domain transfer function data to closed form.

The Office Action further states that Tang et al. teach a method of determining the permeability of earth formations by processing signals recorded by an acoustic logging instrument, including the steps of: measuring said transfer function data in frequency domain, and calculating said frequency domain transfer function data to closed form (col. 6, lines 8-48; col. 7, lines 29-67; col. 8, lines 1-67; col. 1-40 and col. 11, lines 7-40).

The Office Action concludes that it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Tang et al. in the invention of Lu et al. in order to calculate the transfer function data more accurately, and then to determine the complex characteristics of dilatational wavespeed of a material efficiently from the transfer function data in spectral space (Tang et al. in the invention of Lu et al. in order to calculate the transfer function data more accurately, and then to determine the complex characteristics of dilatational wavespeed of a material efficiently from the transfer function data in

Application Serial No: 10/730,194
In reply to Office Action of 9 March 2005

Attorney Docket No. 84280

spectral space (Tang et al., col. 6, lines 8-48; col. 7, lines 29-67; col. 8, lines 1-67; col. 1-40 and col. 11, lines 7-40).

The Examiner has rejected claim 2 under 35 U.S.C. § 103(a) as being unpatentable over Lu et al. in view of Tang et al., as applied to claim 1 above, and further in view of Zeroug et al. (U.S. Pub. No. 20040054474).

The Office Action states that Lu et al. and Tang et al. teach the subject matter discussed above Lu and Tang et al. The combination of Lu and Tang does not mention explicitly: exciting said specimen for least two nonzero wavenumbers; measuring transfer function data subsequent to the excitation of said specimen for at least two nonzero wavenumbers; calculating said transfer function data to closed form subsequent to said measuring step said specimen for said excitation for at least two nonzero wavenumbers; determining an estimated real and imaginary shear wavespeed of the material from said transfer function data calculated to closed form subsequent to said measuring step of said specimen for said excitation for at least two nonzero wavenumbers.

The Office Action further states that Zeroug et al. teach a method for estimating the time varying mechanical properties of a material, comprising the steps of: exciting a specimen of a material for at least two nonzero wavenumbers (section 0056); measuring transfer function data subsequent to the excitation of

Application Serial No: 10/730,194
In reply to Office Action of 9 March 2005

Attorney Docket No. 84280

said specimen for at least two nonzero wavenumbers (sections 0056, 0062-0064, 0075-0077, 0080 and 0084-0093); calculating said transfer function data to closed form subsequent to said measuring step and specimen for said excitation for at least two nonzero wavenumbers (sections 0056, 0062-0064, 0075-0077, 0080 and 0084-0093); and determining an estimated complex shear wavespeed of the material from said transfer function data calculated to closed form subsequent to said measuring step of said specimen for said excitation for at least two nonzero waves numbers (sections 0056, 0062-0064, 0075-0077, 0080 and 0084-0093).

The Office Action concludes that it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Zeroug et al. in the combination of Lu and Tang in order to determine the shear strength and the linear elastic parameters of said material as an important mechanical property from knowledge of the velocity of propagation of the compressional and shear acoustic waves inside said material (Zeroug et al., section 0003).

The Examiner has objected to claims 3-5 as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Application Serial No: 10/730,194
In reply to Office Action of 9 March 2005

Attorney Docket No. 84280

The following is an Examiner's statement of reasons for allowance:

The primary reason for the allowance of claims 3 and 4 is the inclusion of the limitation of obtaining a real and imaginary shear modulus using a grid method of the material from said real and imaginary determined shear wavespeed. It is the limitation found in each of the claims, as it is claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes these claims allowable over the prior art.

The Examiner response to Applicant's arguments received 1/12/2005 with respect to claim 1-5 have been considered but are moot in view of the new grounds of rejection.

Claim 1 and 2 are rejected as new prior art Tang et al has been found to teach the limitations argued by the Applicants. Detailed response is given in section 2 and 3 as set forth above in this Office Action.

These rejections and objections are respectfully traversed in view of the amendment and remarks contained herein.

In the Office Action, claim 1 of the present application was rejected under 35 U.S.C. § 103(a) as being unpatentable over Lu et al. (U.S. Pat. No. 5804727) in view of Tang et al. (Reference A: U.S. Patent No. 5,784,333). In response, claim 1

Application Serial No: 10/730,194
In reply to Office Action of 9 March 2005

Attorney Docket No. 84280

has been cancelled without prejudice or disclaimer. As a result, the rejection of the Office Action is resolved for the claim.

In the Office Action, claim 2 of the present application was rejected under 35 U.S.C. § 103(a) as being unpatentable over Lu et al. in view of Tang et al., as applied to claim 1 above, and further in view of Zeroug et al. (U.S. Pub. No. 20040054474). In response, claim 2 has been cancelled without prejudice or disclaimer; therefore, the rejection of the Office Action is resolved for the claim.

In the Office Action, claims 3-5 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In response, claim 3 has been amended to independent form to incorporate the limitations of the base claim 1 and intervening claim 2. Claims 4 and 5 remain originally written as dependant on the amended claim 3. As a result, the objection of the Office Action is resolved for claim 3 and dependant claims 4 and 5.

In view of the Remarks above, the Applicant respectfully requests reconsideration and allowance of the application.

The Examiner is invited to telephone Michael P. Stanley; Attorney for the Applicant, at 401-832-6396 if, in the opinion

Application Serial No: 10/730,194
In reply to Office Action of 9 March 2005

Attorney Docket No. 84280

of the Examiner, such a telephone call would serve to expedite
the prosecution of the subject patent application.

Respectfully submitted,
ANDREW J. HULL

5 April 2005

By



MICHAEL P. STANLEY
Attorney of Record
Reg. No. 47108